MEMORANDUM

STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
CONSUMER PROTECTION AND SAFETY DIVISION

DATE: December 16, 2005

FROM: Daren Gilbert, Supervisor
Rail Crossings Engineering Section
Rail Transit & Crossings Branch

TO: Interested Parties

SUBJECT: Proposed Commission General Order 75-D to supersede and replace Commission General Order 75-C

Introduction

The California Public Utilities Commission (CPUC or Commission) has jurisdiction over the safety of highway-rail crossings in California. The Commission's rules are carried out in the adopted General Orders (GO), which establish Commission policies, standards, guidelines, etc. GO 75-C pertains to installation of warning devices at at-grade highway-rail crossings. Commission's Rail Crossings Engineering Section (RCES) proposes to replace the existing GO 75-C with GO 75-D. RCES' first step was to draft proposed language for GO 75-D. We may organize public participation workshops in Los Angeles and San Francisco. Staff is mailing the first draft of the proposed GO 75-D only to those interested parties which requested notification to solicit written comments. We may make further modifications to the proposed draft GO 75-D based on comments we receive, and use the comments to develop the agenda and focus discussion of the workshops. All written comments are due January 27, 2005.

Tracking Changes

RCES rewrote certain sections and also changed the structure (sequence of sections) of GO 75-C. In order to effectively highlight the changes, this memorandum shows tracked changes for each individual section.

Figures are not included in the draft proposed GO 75-D, because we decided to concentrate on the text portion first. Once the text portion is finalized, then figures will be added and renumbered to conform to the revised text. Accordingly, in proposed GO 75-D all references to figures have blank spaces for figure numbers.

Details of Proposed Changes

Title

> *REGULATIONS GOVERNING THE ~~PROTECTION~~ INSTALLATION OF ~~CROSSINGS~~ WARNING DEVICES FOR AT-GRADE ~~OF ROADS, HIGHWAYS AND STREETS WITH RAILROADS~~ HIGHWAY-RAIL CROSSINGS IN THE STATE OF CALIFORNIA*

In the entire document the word "protection" has been replaced with the word "warning device", because the primary purpose of the devices is to provide warning to motorists.

Language referring to "street, road and highway" has been replaced with "crossings", in order to clearly show that these rules apply to all crossings, including motorist and pedestrian/bicyclist travel ways.

Introduction

> *IT IS HEREBY ORDERED by the Public Utilities Commission of the State of California, that the following regulations governing the ~~protection~~ installation of ~~street, road and highway~~ warning devices for at-grade highway-rail crossings (where a railway crosses a highway, street, road, pedestrian/bicycle path, or any other pathway), ~~with railroads~~, hereinafter referred to as crossings, be observed in this State unless otherwise authorized or directed by the Commission. (Issued in accordance with ~~Chapter 6, Section~~ Sections 768, 778, 1202, 7537 and 99152 of California Public Utilities Code).*

The language in parentheses has been added after "highway-rail crossings" in order to clarify what "highway-rail crossings" refers to in this General Order.

Reference to Public Utilities (PU) Code Sections 768, 778, 7537, and 99152[1] has been added because they all state that Commission may adopt rules in the area covered by this GO.

Purpose of Rules

> *The purpose of these rules is to formulate uniform standards for ~~grade crossing protection~~ installation of warning devices on approaches to ~~be used~~ crossings in the State of California, the application of which may afford greater safety at ~~railroad grade~~ crossings. All references in this General Order (GO) to crossing approaches refer to the non-track approaches to the crossing.*

A definition of "crossing approaches" has been added to clarify that this GO pertains to non-track approaches to crossings, and it does not cover warning devices on track approaches.

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PU Code §768. The commission may, after a hearing, require every public utility to construct, maintain, and operate its line, …tracks, and premises in a manner so as to promote and safeguard the health and safety of its employees, passengers, customers, and the public. The commission may prescribe, among other things, the installation, use, maintenance, and operation of appropriate safety or other devices or appliances, including interlocking and other protective devices at grade crossings or junctions and block or other systems of signaling. The commission may establish uniform or other standards of construction and equipment, and require the performance of any other act which the health or safety of its employees, passengers, customers, or the public may demand….

PU Code §778. The commission shall adopt rules and regulations, which shall become effective on July 1, 1977, relating to safety appliances and procedures for rail transit services operated at grade and in vehicular traffic. The rules and regulations shall include, but not be limited to, provisions on grade crossing protection devices, headways, and maximum operating speeds with respect to the speed and volume of vehicular traffic within which the transit service is operated.

The commission shall submit the proposed rules and regulations to the Legislature not later than April 1, 1977.

PU Code §7537. The owner of any lands along or through which any railroad is constructed or maintained, may have such farm or private crossings over the railroad and railroad right of way as are reasonably necessary or convenient for ingress to or egress from such lands, or in order to connect such lands with other adjacent lands of the owner. The owner or operator of the railroad shall construct and at all times maintain such farm or private crossing in a good, safe, and passable condition. The commission shall have the authority to determine the necessity for any crossing and the place, manner, and conditions under which the crossing shall be constructed and maintained, and shall fix and assess the cost and expense thereof.

PU Code §99152. Any public transit guideway planned, acquired, or constructed, on or after January 1, 1979, is subject to regulations of the Public Utilities Commission relating to safety appliances and procedures.

The commission shall inspect all work done on those guideways and may make further additions or changes necessary for the purpose of safety to employees and the general public.

The commission shall develop an oversight program employing safety planning criteria, guidelines, safety standards, and safety procedures to be met by operators in the design, construction, and operation of those guideways. Existing industry standards shall be used where applicable.

The commission shall enforce the provisions of this section.

Scope of Rules

> *These rules are not intended as complete construction specifications. Construction shall be according to accepted ~~good~~ best practices for the given local conditions in all particulars not specified in the rules. Unless otherwise provided in these rules, this order shall not be retroactive with respect to ~~grade~~ crossings lawfully existing on its effective date, except that the Commission reserves the right to require, by appropriate proceedings, alterations or improvements at any such crossings.*

The phrase "good practice" has been replaced with "best practices," which is used more commonly.

The word "grade" has been eliminated for consistency throughout the document.

Commission Policy On Reducing Number of At-Grade Crossings

> ***POLICY ON REDUCING NUMBER OF AT-GRADE CROSSINGS***
> *It is the Commission's policy to reduce the number of at-grade crossings in California. This policy will be adhered to more strictly for crossings involving track classified as mainline, particularly those with multiple tracks or operated over by passenger trains.*

Commission's policy to reduce number of at-grade crossings, which the Commission has declared in past formal decisions.

Reference to AREMA and MUTCD Standards

> ~~***COMMISSIONIS STANDARD SIGNS AND SIGNALS***~~
> ~~*The Commission's standard signs and signals are generally similar in size, type and design to the recommended standards which constitute the railroad-highway grade crossing protection approved and authorized for use of member railroads by the Association of American Railroads as shown in Bulletin No. 6, dated 1966, entitled "Railroad-Highway Grade Crossing Protection", including all additions thereto and revisions thereof made prior to the effective date of this order.*~~
>
> ***AREMA AND MUTCD STANDARDS***
> *All crossing warning devices shall conform to the American Railway Engineering and Maintenance of Way Association (AREMA) "Communications and Signals Manual of Recommended Practices." Where an AREMA recommended practice conflicts with this GO, the requirements of this GO shall apply.*

The Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration, as amended by the MUTCD California Supplement published by the California Department of Transportation (Caltrans), prescribes uniform standards and specifications for all official traffic control devices in California. All references herein to the MUTCD refer to the MUTCD as amended by the California Supplement.

The title and the entire content of this section have been changed to more clearly explain the usage of AREMA and MUTCD.

Posting Crossing Numbers

~~*Unless otherwise specified, each railroad shall at each public grade crossing of its track paint or otherwise maintain on the crossing signpost or other structure an identification number which has been assigned by the Commission, Such number shall be placed so as to be readily legible from the highway*~~

Each crossing used by the public shall have the following information posted conspicuously and legibly at the crossing by the entity responsible for the maintenance of the crossing:

a) number that uniquely identifies the crossing

b) roadway name, where applicable

c) rail milepost

d) emergency phone number

In all matters pertaining to any crossing brought to the attention of the Commission, reference shall be given to the Commission assigned crossing number. ~~*(See Figure 11.)*~~

~~*At crossings of named streets within incorporated cities where the railroad is not required to maintain a Standard No. 1-R crossing sign, or other special types of signs or crossing signals supported by posts, pedestals, foundations or crossing gates, the crossing identification number will not be required. (For method of assigning crossing numbers, see the Commission's Form "M".)*~~

Section 5.1 does not apply to crossings exempted from the requirements of Section 6.

This section has been revised to clearly explain what information is required to be posted.

Installation of Warning Devices

~~***INSTALLATION OF STANDARD SIGNS AND SIGNALS REQUIRED***~~

STANDARD CROSSING WARNING DEVICES

~~At all grade crossings hereinafter opened there shall be installed, before opening two or more of the following standard signs or signals (Subsections 6.1 through 6.8)~~ Prior to opening a crossing, standard crossing warning devices described below shall be installed, as authorized by the Commission. ~~(Subsections 6.9 through 6.13 are not Commission requirements but are included for reference only.)~~

This section has been reworded to replace "standard signs and signals" with "standard crossing warning devices." Because the structure of the GO has been changed, along with the numbering of sections, the last sentence was eliminated.

Definition of Standard 1-R

Standard ~~No.~~ 1-R. ~~A fixed sign consisting of a wood or metal post, to which two blades are attached at an intersecting angle of approximately 90° having the words "Railroad Crossing" in black letters on reflectorized white background. (See Figure 3)~~
A Crossbuck (defined as R15-1 in the MUTCD) installed on a retroreflectorized wood or metal post. See Figure ___ for additional specifications.

The definition has been changed in order to make it consistent with the MUTCD. The MUTCD also defines warning devices as "Standard __" instead of "Standard No. __". Accordingly, definitions of standard warning devices do not include "No."

Definition of Standard 8

Standard ~~No.~~ 8. ~~A~~ An automatic flashing light signal~~,~~ assembly which, by alternately flashing red lights ~~in both directions along the street or highway~~ facing each approach, provides a warning of an approaching train. ~~Signals~~ A Crossbuck shall be installed on ~~both approaches of~~ the ~~street or highway except on one-way streets and a sign reading "Railroad Crossing", similar in design to Standard No. 1-R, shall be mounted on the signal~~ mast ~~above the flashing light assembly. (~~. See Figure ___ for additional specifications.

The definition has been changed to make it clearer and consistent with MUTCD.

Definition of Standard 8A

A ~~fixed or rotatable~~ Standard 8 with a cantilever mounted on a mast~~,~~ with additional flashing lights ~~units similar to Standard No. 8 in signal action. The flashing light units shall be installed~~ over the roadway on the

cantilever arm. ~~(See Figure 5)~~ See Figure ___ for additional specifications.

The definition has been changed to make it clearer and consistent with the MUTCD.

Definition of Standard 8B

~~*Standard No. 8-B Cantilever. A fixed or rotatable cantilever, mounted on a mast, with flashing light units and is similar to Standard No. 8 in signal action. The flashing light units shall be installed over the roadway on the cantilever arm and used where a Standard No. 8 would be difficult to install because of location. (See Figure 6)*~~

The definition of Standard 8B has been eliminated, because Standard 8Bs are rarely used. The only difference between an 8A and an 8B is that the 8B does not have flashing light signals on its mast. If in the future there is a need to install an 8B, it can simply be authorized as an 8A without mast-mounted flashing lights.

Definition of Standard 9, 9A, and quad-gates

Standard~~s Nos. 9, 9-A and 9-B. A crossing~~ An automatic gate arm used in combination with a Standard~~s Nos. 8, 8-A or 8-B above~~. The gate mechanism may be mounted on the ~~signal~~ Standard 8 mast or separately on an adjacent pedestal ~~located adjacent thereto. In operation, when activated by an approaching train, the gate arm is lowered to form a horizontal barrier between approaching vehicles and the track. A steadily burning red light shall be installed on the tip, and two or more flashing red lights shall be installed on the extended gate arm to provide a warning of an approaching train. Gate arms shall be in a horizontal position prior to the arrival of any train, not extend beyond the centerline of other than a one-way roadway and shall be raised after passage of a train. (See Figures 7, 8 and 9)~~ The automatic gate shall be designed to fail in the down position. A Crossbuck shall be installed on the mast. See Figure ___ for additional specifications.

~~*Standards Nos. 9-C, 9-AC, and 9-BC.** A four quadrant gate system used in combination with Standards Nos. 9, 9-A or 9-B above. The gate mechanisms may be mounted on the signal mast or separately on a pedestal located adjacent thereto. The gates mounted on the right side of the road shall be known as entrance gates, and the gates mounted on the left side of the road shall be known as exit gates. The installation of an approved audible device on the exit gate is optional. In operation, when activated by an approaching train, the gate arms are lowered. A steadily burning red light shall be installed on the tip, and two or more flashing red*~~

~~*lights shall be installed on the extended gate arm. Entrance gate arms shall be in a horizontal position prior to the arrival of the train, and entrance and exit gates shall be raised after passage of the train. Entrance gate mechanisms shall be designed to fail in the down position, and exit gate mechanisms shall be designed to fail in the up position. The entrance gates shall begin their descent before the exit gates, and the entrance gates shall be horizontal before the exit gates are horizontal. When the gates are fully lowered the gap between the ends of the gates must be less than two feet if no median between lanes is present. If there is a median or if channelization devices are installed, the gap between the gate end and the median or channelization devices must be within one foot. A vehicle presence detection system should be installed as part of the four quadrant gate system, subject to a Commission staff diagnostic field meeting recommendation and an engineering study performed by the railroad or local road agencies. The vehicle presence detection system shall be designed to allow a vehicle to exit the crossing area. A written agreement between the railroad and the public agencies responsible for the roadway shall be included as part of the application to the Commission.*~~

Exit Gate
A Standard 9 may be installed on the departure side of the crossing (also known as an exit gate) in addition to the typical approach side of the crossing (also known as an entrance gate). Exit gates shall operate in the following manner:

a) *Exit gates shall be designed to fail in the up position.*
b) *Entrance gates shall begin their descent before exit gates and shall be horizontal before the exit gates are horizontal.*
c) *A vehicle presence detection system shall be installed whenever exit gates are used. The system shall be designed such that it prevents vehicles from getting trapped on the tracks between the entrance and exit gates.*
d) *Exit gates shall be equipped with both front and back flashing light signals.*

Standard 9-A. A Standard 9 with a cantilever mounted on a mast with additional flashing lights over the roadway on the cantilever arm. See Figure ___ for additional specifications.

We have been asked if a Standard 9-C refers to the entire 4-quad gate system, an individual gate in the 4-quad gate system, or an exit gate. GO 75-D eliminates the definition of Standard 9-C, instead it refers to a Standard 9 that can be used as an exit gate.

AREMA and MUTCD have detailed descriptions about the action of the gates and flashing lights on the gates, accordingly redundant language has been eliminated.

Definition of Standard 10

~~*Standard No. 10. An automatic crossing signal used for pedestrian crossings where required by the Commission. It is similar to a Standard No. 8 crossing signal in signal action. (See Figure 10)*~~

Definition of Standard 10 (pedestrian crossing warning device) has been eliminated because it is rarely used. Standard 10 is a Standard 8 with a single flashing light signal. Because a pair of flashing light signals is the universally accepted device at railroad crossings, we have been recommending using Standard 8s wherever Standard 10 used to be recommended.

Definition of Standard 11

Standard 11. A pedestrian pull-gate, also referred to as a swing-gate, designed to open away from the tracks and automatically close when released. See Figure ___ for additional specifications.

Definition of a pull-gate as Standard 11 has been added, due to the common usage of these devices at pedestrian crossings.

Definition of Private Crossing

A crossing is considered private when the approaches to the crossing are privately owned, the general public is not permitted access, and there exists a written agreement for the crossing.

A definition of private crossings has been added for clarification.

Definition of Standard 1-X

~~*Standard No. I-C. A fixed sign consisting of an octagonal sign on a metal post with the word "Stop" in reflectorized white letters on reflectorized red background. A separate sign mounted on the same post shall indicate a private crossing in black letters on reflectorized white background. The private crossing sign may include a "No Trespassing" sign at the option of the railroad. (See Figure 1)*~~

Standard 1-X. "PRIVATE CROSSING" sign shall be installed at all private crossings. See Figure ___ for additional specifications.

In GO 75-C, Standard 1-C is defined as a STOP sign with a PRIVATE CROSSING sign. The Standard 1-C has been eliminated, and instead Standard 1-X has been defined as the PRIVATE CROSSING sign by itself. This was done because the private crossing sign can also be used on automatic warning devices without a STOP sign. The combination of a STOP sign with the PRIVATE CROSSING can be described as a STOP sign with a Standard 1-X.

Usage of Private Crossing Sign

~~*The signs depicted in Figure 1 shall be installed at private railroad grade crossings where no automatic crossing protective device is in place. Two such masts with signs shall be installed at each private railroad grade crossing, one facing each road approach unless there is inadequate space to locate the sign or signs.*~~

~~*The lower sign shown in Figure 1 attached hereto shall be attached to automatic crossing protective devices when installed at private railroad grade crossings.*~~

At all approaches to private crossings there shall be installed either a STOP sign (defined as a Standard R1-1 in the MUTCD) or an automatic crossing warning device described in Section 6.1 to 6.5.

If a STOP sign is used, the Standard 1-X sign shall be mounted on the post below it.

If a Standard 8, 8-A, 9, or 9-A device is used, the Standard 1-X sign shall be attached to the mast of the warning device below the flashing light signals. See Figure ___ for additional specifications.

With the elimination of definition of Standard 1-C and introduction of Standard 1-X, the section on the usage of private crossing signs was rewritten. Reference to the STOP sign (referred to as R1-1 in the MUTCD) was added. Explanation of how the private crossing sign can be used on automatic warning devices has also been added.

Additional Details on Usage of Private Crossing Sign

The language contained in the lower portion of the ~~lower~~ "PRIVATE CROSSING" sign shown in Figure ~~1~~ ___, commencing with and including the words "No Trespassing", shall be permitted at the option of the railroad~~, but is not required by the Commission (Decision No. 75094 in Case No. 8207)~~.

Minor changes to the existing language have been made, and reference to the D.75094 has been eliminated because it does not provide any additional information.

When does the Commission Exercise its Jurisdiction over Private Crossings

> *Pursuant to Public Utilities Code Section 7537, the Commission has the authority to determine the necessity for any private railroad crossing and the place, manner, and conditions under which the crossing shall be constructed and maintained, and to fix and assess the cost and expense thereof, and the Commission will exert such jurisdiction when it is either petitioned by one of the parties or Commission staff determines it is necessary.*

This language has been added to answer a frequently asked question on this topic.

Crossing Devices to Conform to Commission Standards

> *~~Automatic Signals~~ Crossing Warning Devices to Conform to Commission Standards. All automatic ~~signals~~ crossing warning devices hereinafter installed ~~at a crossing at grade of highway with a railroad~~ shall, unless otherwise authorized by the Commission, conform ~~substantially~~ to the specifications ~~herein illustrated and designated as~~ shown in Figures ~~4~~___ through ~~10~~.___. This rule is not to be construed as prohibiting automatic ~~signals~~ crossing warning devices of a different type installed in accordance with previous orders of this Commission (former Commission Standards 3 through 7, and 10) nor shall it be construed as prohibiting the replacement in kind or the relocation of such signals at a particular crossing.*

This section was rewritten for clarity and consistency.

Warning Device Activation Time

> *~~Length of Circuit. Crossing signals at main or branch line crossings~~ Warning Device Activation Time Limits. Automatic crossing warning devices shall be actuated by ~~trains~~ approaching ~~on main tracks~~ trains through track circuits or by electronic controls for approximately 25 seconds with limits of from 20 to 30 seconds in advance of the ~~normally fastest~~ arrival of the train ~~operated over the crossing protected, except where special conditions prevail. Tracks other than main tracks of branch or main lines shall be provided with a circuit or control which will activate the signals when a train occupies~~ at the crossing. Prolonged signal operation caused by standing ~~cars~~ trains or by open~~ed~~ switches within the*

signal limits of the crossing control circuits must be avoided ~~whenever possible by the use of appropriate control devices~~.

~~Signals Not to Operate After Passage of Train. Controls for automatic~~. Automatic crossing ~~signals shall be arranged so that signals will display a warning aspect~~ warning devices shall remain active until~~, but not after,~~ the rear of the train clears the crossing. When the train clears the crossing, and if no other train is detected, the gate arms shall ascend to their upright positions, following which the flashing lights and the lights on the gate arms shall cease operation.

This section has been rewritten for clarity.

Signals to Operate on Reverse Movements

~~Signals to Operate for Reverse Movements. Where two or more tracks cross the road, highway or street at grade, and reverse running against the current of rail traffic is frequent, control of signals shall be so arranged as to give adequate warning of such reverse movements.~~

This section has been eliminated, because it is redundant. The previous section on warning device activation time covers this subject.

Failure of Controls

Failure of Controls. ~~Crossing signals~~ Automatic crossing warning devices shall be installed so that failure of controls or other apparatus will result in ~~a warning aspect being displayed~~ the activation of the warning devices (see exception for exit gates in Section 6.4).

This section has been rewritten for clarity.

Manual Control

Manual Control May Be Used When Necessary. At locations where numerous switching movements or other conditions would cause automatic ~~control signals~~ crossing warning devices to ~~operate~~ activate unnecessarily or to an unreasonable extent, ~~such signals~~ the automatic crossing warning devices may be supplemented by manual control governed by a flagman, or manual operation of the automatic warning device to reduce abnormal ~~signal~~ warning~~. Signals~~ device activation. Crossing warning devices so equipped shall be automatically controlled during other periods.

This section has been rewritten for clarity.

Color of Masts

~~Painting. Posts and~~ Color of Masts. Masts, assemblies, and cantilevered structures of flashing light signals shall be painted ~~white or~~ silver, except those parts functioning as a background for the light signal indications~~, which shall be painted with non-reflecting black. The crossing sign shall be similar to Standard No. 1-R with the words "Railroad Crossing" in black letters on reflectorized white background. Gate arms shall be striped on both sides with 16-inch alternate diagonal reflectorized red and white strips.~~ (see Section 8.7).

This section has been rewritten for clarity. The requirement to paint devices white has been eliminated, because all of them are now painted silver.

Flashing Light Signals

~~Hoods~~ Flashing Light Signals: Lenses and ~~Backgrounds: Lamps~~ roundels shall be 12 inches in diameter and shall be properly hooded. ~~Lenses and Roundels: Lenses and roundels shall be eight inches minimum, 12 inches maximum.~~ Light emitting diode (LED) arrays shall be used for all flashing light signals. Hoods and backgrounds shall be painted non-reflecting black. Backgrounds shall be ~~20 inches in diameter for 8 3/8-inch roundels and~~ 24 inches in diameter ~~for 12-inch roundels~~.

We are requiring LED lights and 12-inch lenses at all new installations. This has been the industry standard, not only for rail industry but also for traffic signals.

Additional Warning Device Specifications

~~Flashes: Red lights shall flash alternately. The number of flashes of each light per minute shall be 30 minimum, 55 maximum.~~
~~Light Unit:* The Light unit shall produce highway crossing signal red light in accordance with the American Railway Engineering and Maintenance-of-Way Association (AREMA) Signal Manual, Part 3.2.35-Recommended Design Criteria for Electric Light Unit for Highway-Rail Grade Crossing Signals including Light Emitting Arrays and Incandescent Lamps.~~
~~Range: When lamps are operated at normal voltage, the range, on tangent, shall be at least 300 feet on a clear day, with a bright sun at or near the zenith.~~
~~Spread: The beam spread shall be not less than three degrees each side of the axial beam under normal conditions. This beam spread is~~

~~*interpreted to refer to the point at the angle mentioned where the intensity of the beam is 50 percent of the axial beam under normal conditions.*~~
~~*Short Range Indication: Signal shall display a satisfactory short range indication.*~~
~~*Peepholes: Peepholes may be used.*~~

These specifications have been eliminated because they are already included in federal rules, AREMA standards, or other reference documents.

Audible Warning Devices

~~*Display: Except as otherwise provided, signals shall display a danger warning in both directions along the highway. Unless omitted by permission of the Commission, the warning aspect shall be accompanied by the sounding of a bell.*~~
Audible Warning Devices: Bells or other audible warning devices shall be included in all automatic crossing warning device assemblies and shall be operated in conjunction with the flashing light signals to provide additional warning for vehicles, pedestrians and bicyclists. See AREMA for specifications. See exception in Section 9 regarding optional usage of audible warning devices on warning devices installed on raised island medians.

In GO 75-C the section about sounding of bells is hidden and difficult to find. The language has been moved to an independent section in GO 75-D, so that it can be found easily. It has also been rewritten to make it clearer.

Gate Arms

Gate Arms: Gate arms shall be fully retroreflectorized on both sides and have stripes as specified by the MUTCD. The gate arms shall have at least three red lights. A steadily burning red light shall be installed on the end of the gate arm, and two or more alternately flashing red lights shall be installed on the gate arm to provide warning of an approaching and passing train. Gate arms shall be in a horizontal position at least five seconds prior to the arrival of a train.

When the gates are fully lowered the gap between the ends of two complimentary gates must be less than two feet. If there is a median, center-lane striping, or other form of channelization installed, the gap between the gate end and the channelization device must be within one foot.

New section was added to address frequently asked questions.

Interconnection with Traffic Signals

~~*Traffic Signals Near Grade Crossings.*~~ *Traffic Signal Interconnection.* *At* ~~*some street and highway*~~ *crossings where vehicular traffic queues from traffic signal-controlled* intersections~~, railroad tracks pass in or near~~ *exceed* the ~~*intersection and are protected by traffic signals. At such intersections preemption of*~~ *"clear storage distance" as defined in* the ~~*traffic signals by the railroad signals to avoid conflicting aspects of MUTCD,*~~ the traffic signals ~~*and the railroad crossing signals should*~~ *shall* be ~~*provided. (Refer to "Manual on Uniform Traffic Control Devices*~~ *interconnected with the crossing warning devices* for ~~*Streets and Highways", Department of Transportation, Federal Highway Administration, 1971 Edition, Section 4B-21 (as amended) for details of installation and operation)*~~ *preemption*.

This section was rewritten for clarity it and consistency with MUTCD.

Figures Showing Clearance Requirements

Clearance Requirements. Figures ___ through ___ specify distances crossing warning devices must be installed from tracks. Unless otherwise specified in the figures, the distances are measured from centerline of the crossing warning device mast to the centerline of tracks nearest to the device.

New section was added to address frequently asked questions.

Clear Sightlines

~~*Protection shall not be installed so that an obstruction will impair a motorist's view of the signs or signals.*~~

Sightlines for Crossing Warning Devices. Sightlines along the crossing approaches to crossing warning devices shall not be obstructed.

This section has been rewritten for clarity.

Parking Prohibition Neat Tracks

Parking Prohibition Near Tracks. Parking must be prohibited a distance no less than 15 feet from the nearest track on all sides of a crossing.

This section was added to maintain clear sightlines. Fifteen feet was selected because stop lines are required to be a minimum of 15-feet from nearest track.

Location of Warning Devices

~~***AUTOMATIC CROSSING SIGNAL INSTALLATION***~~
LOCATION OF CROSSING WARNING DEVICES

Unless otherwise ordered by the Commission, ~~grade~~ crossing ~~signals~~ warning devices shall be located in a conspicuous position ~~at both corners of~~ on all approaches to the crossing ~~intersection~~ on the right-hand side of ~~highway~~ traffic flow and in advance of the ~~railroad~~ track (see exception regarding installation of exit gates in Section 6.4).

Additional ~~signals~~ crossing warning devices may be installed ~~in the center of the street and in advance of the track where a median exists or is provided by the public agency having jurisdiction over the roadway approaching the crossing.~~ on raised island medians. At crossings where warning devices are installed on the right-hand side of traffic flow, backlights or audible warning devices are not required on median-mounted warning devices, except for exit gates installed on raised island medians which are required to be equipped with both front and back flashing light signals (see Section 6.4).

All automatic ~~protective~~ crossing warning devices may be placed on the same side of the ~~railroad~~ track~~s~~ where ~~vehicular~~ traffic is one way only. ~~Backlights or bells are not required on signals installed on medians unless specifically ordered by the Commission at a particular location.~~

This section has been rewritten for clarity.

Crossing Required to be equipped with Automatic Gates

At grade-crossings on a mainline with two or more tracks shall be equipped, at a minimum, with automatic gates and flashing light signals.

The rule in Section 10.1 regarding requiring automatic gates shall apply to all at-grade crossings ten years after the effective date of this GO.

We included minimum criteria for installing gates, because we believe safety requires it. Considering the cost of installing gates, we are suggesting a 10-year compliance period for existing crossings.

Advance Warning Signs

~~*Railroad Crossing Pavement Markings. Refer to: Traffic Manual-State of California Department of Public Works, 1971 Edition, Chapter 6, pages 6-11, and Figures 6-9, pages 6-14 (as amended) for location and use.*~~

Advance Warning Signs. Refer to the MUTCD for requirements on advance warning signs, such as W-10 series, and pavement markings, such as stop lines and RXR markings.

This section has been rewritten to highlight the MUTCD requirement for installing advance warning sign and pavement markings and eliminate outdated reference to the Traffic Manual.

DO NOT STOP ON TRACKS sign

"DO NOT STOP ON TRACKS" sign. At crossings where vehicular traffic queues from nearby intersections exceed the "clear storage distance" as defined in the MUTCD, the "DO NOT STOP ON TRACKS" sign (defined as R8-8 sign in the MUTCD) shall be installed.

This new section has been added to highlight the MUTCD requirement for installing DO NOT STOP ON TRACKS sign.

Multiple Track Sign

~~*Multiple Track Signs. Refer to: Traffic Manual-State of California Department of Public Works, 1971 Edition, Chapter 4, pages 4-14 (as amended) for use.*~~
Number of Tracks Signs. The sign defined as Standard R15-2 in the MUTCD (Number of Tracks sign in inverted T-shape) shall be installed beneath each Crossbuck where there are two or more tracks at a crossing. See Figure ___ for usage specifications.

The sign defined as CA Code W48 in the MUTCD (Number of Tracks sign) shall be installed below each W10 series advance warning sign where there are two or more tracks at a crossing. See Figure ___ for usage specifications.

This section has been rewritten to eliminate outdated reference to Traffic Manual and include references to both MUTCD and MUTCD California Supplement Requirements for these signs.

Standard 1-D (Pedestrian/Bicycle Crossing Sign)

Standard ~~No.~~ 1-D. ~~A fixed rectangular sign on a wood or metal post consisting of black letters on reflectorized white background to indicate a crossing for pedestrians only. (See Figure 2)~~
"PEDESTRIANS AND BICYCLES ONLY" in black lettering on a rectangular sign with a retroreflectorized white background shall be posted at crossings exclusively used by pedestrians and/or bicyclists.

If a Standard 1-R sign is used, the Standard 1-D sign shall be mounted on the post below the Crossbuck. If an R15-2 sign is used in combination with the Standard 1-R, the Standard 1-D sign shall be placed below the R15-2 sign.

If a Standard 8, 8-A, 9, or 9-A device is used, the Standard 1-D sign shall be attached to the mast of the warning device below the flashing light signals. See Figure ___ for additional specifications.

This section has been rewritten to include a definition consistent with MUTCD, and to also clearly describe the placement of this sign.

Exempt Crossing Sign

Exempt Crossing Signs. Use in accordance with GO 145 and California Vehicle Code Section 22452 ~~of the Vehicle Code~~ at ~~grade~~ crossings ~~which~~ that have been declared exempt by Order of the Commission~~, Refer to: Traffic Manual-State of California Department of Public Works, 1971 Edition, Chapter 4, pages 4-37 (as amended) for location~~.

This section has been rewritten to include reference to GO 145, and also eliminate the outdated reference to the Traffic Manual.

Auxiliary Signs and Signals

~~Special Crossing Signs. Special crossing signs for unusual conditions may be installed only after 30 days' advance written notice of such proposed installation to the Commission and the written approval of the Commission has been received. The Commission reserves the night to require a formal application before special crossing signs may be authorized.~~

~~Auxiliary Signs and Signals. Auxiliary signs and signals not included in the above, such as "No Right Turn", "No Left Turn" and train-activated advance warning signs authorized in advance by the Commission, may be used in conjunction with any of the above signs and signals.~~

Auxiliary Signs and Signals. Auxiliary signs and signals not included in the above, such as "No Right Turn", "No Left Turn" or train-activated devices, may be used in conjunction with any of the above signs and signals, in accordance with the MUTCD or as otherwise authorized by the Commission.

The above two deleted sections have been rewritten and combined into one section to allow usage of auxiliary signs approved by MUTCD, without needing advance Commission approval.

Footnotes in GO 75-C

~~*On a curbed street, the supporting posts shall be placed not less than three feet from the curb line; on an uncurbed street, where there are no shoulders, the supporting posts shall be placed at least six feet from the edge of the pavement and where there is a shoulder the supporting posts shall be offset from the traveled way a sufficient distance to clear the full width of shoulder on the approach plus four feet.*~~

~~*Requirements in these rules and specifications with respect to range of automatic signals and warning displays facing traffic, refer and shall only be applicable to traffic approaching the crossing on a straight line approximately parallel or tangential to the center line of the highway at the point where it crosses the tracks and shall not be applicable either to traffic approaching from other angles or directions or to approaching traffic where there are intervening hills, curves, buildings or other obstructions.*~~

~~*Alternate types of cantilever arms are acceptable provided that signal heads are positioned as shown. The bell may be installed at any suitable position on the mast.*~~

~~*(Notes above refer to Figures 4 through 9.)*~~

The language cited above appears in footnotes in GO 75-C. The first paragraph has been eliminated, because the clearance requirements are illustrated in a figure in MUTCD. The other two paragraphs have been eliminated because they are unnecessary.

Maintenance of Crossing Warning Devices

~~***REPLACEMENT OF CROSSING PROTECTION***~~

~~*Absence of crossing signs and automatic protective devices due to accidents shall not be considered a violation of this order until after a reasonable time for replacement has elapsed.*~~

If a crossing warning sign or automatic warning device has been damaged, removed, or otherwise unintentionally rendered inoperative, it shall be brought into normal operating condition or reinstalled within a reasonable amount of time. See Title 49 of Code of Federal Regulation (CFR), Section 234.105.

Entities responsible for the maintenance of a crossing, that are not regulated by the Federal Railroad Administration (such as light rail transit agencies), shall comply with the flagging rules provided in Title 49 CFR, Section 234.105.

Trains shall be flagged if crossing warning devices are missing or inoperative.

Language referring to CFR, and language indicating that LRT crossings shall follow the same CFR rules (even though the CFR rules are for heavy rail crossings), have been added.

Removal, Reduction, Substitution or Addition of Crossing Warning Devices

~~***REMOVAL, REDUCTION, OR SUBSTITUTION OR ADDITION OF WARNING DEVICES*****~~
~~*No railroad shall hereafter remove, change the type, or add an automatic warning device, crossing gate, crossing flagman or other forms of crossing warning device or reduce the hours during which any such warning method is maintained, unless prior consent for such removal, addition, or reduction shall have been secured from this Commission; provided, however, that a flagman on duty to temporarily direct at a crossing during an emergency, may be removed without such consent. Application for consent of the Commission may be in letter form; however, the Commission may require filing of a formal application and a hearing.*~~

MODIFICATIONS OF CROSSING WARNING DEVICES
The removal, reduction, addition, or change in type of crossing warning devices, including train detection circuitry that may effect interconnections with adjacent traffic signals, or any other modification that may impact the safety of the crossing, shall not be permitted unless authorized by the Commission. (See General Order 88)

This section has been rewritten for clarity.

Form G

Upon completion of any approved changes in warning devices, notice of such change shall be ~~given~~ submitted to the Commission within ~~thirty (~~30~~)~~ days following the ~~close~~ effective date of the ~~month in which the~~ change ~~is effective. (Report.~~ The report shall be on the Commission's Form ~~"~~G~~".)~~.

This section has been rewritten to require submittal of Form G 30-days after the changes are made, instead of 30-days after the close of the month when the changes are made.

Elimination of at-grade Crossings

ELIMINATION OF AT-GRADE CROSSING
A Commission's Form G shall be submitted to Commission staff within 30 days following the elimination of an at-grade crossing.

All crossing warning devices shall be removed within 60 days after termination of train operations over a crossing. The entity responsible for the maintenance of crossing warning devices immediately prior to the termination of train operations shall be responsible for the removal of the crossing warning devices.

This section has been added to provide guidance on how to report crossing eliminations to the Commission, and provide rules for removal of crossing warning devices.

GO Applies to Railroads

~~***APPLIES TO RAILROADS***~~
~~*This General Order applies to all railroads subject to the jurisdiction of the Commission.*~~

This section has been eliminated because it is unnecessary.

Exemptions

If, in a particular case, exemption from any of the requirements herein is desired, the Commission will consider the ~~application for such~~ exemption when accompanied by a full statement of the existing conditions ~~existing~~ and a justification for the ~~reasons why such~~ exemption ~~is asked. It is to be understood that any~~. Any exemption so granted shall be limited to the particular case ~~covered by the application~~.

This section has been rewritten to make it clearer.

Experimental Devices

> *Nothing herein shall be construed as limiting the trial installation of experimental ~~grade crossing protective~~ warning devices, provided the Commission has approved such plan in advance of the time the device is installed.*

This section has been rewritten for consistency.

Replacement of Crossing Warning Devices

> *Nothing herein shall be construed as prohibiting replacement of ~~automatic~~ crossing ~~signaling~~ warning devices of the same form or standard as designated in this or previous orders.*

This section has been rewritten for consistency.

Right to Modify GO

> *The Commission reserves the right to modify any of the provisions of these rules in specific cases, when, in the Commission's opinion, public interest would be served by so doing.*

No changes for this section.